MUMPS

DISEASE REPORTING

In Washington:

DOH receives 2 to 26 reports of mumps infections per year.

Because of the potential for disease transmission, cases and susceptible contacts must be excluded from school or work activities as appropriate and unvaccinated susceptible contacts should be identified. Please call DOH Communicable Disease Epidemiology (1-877-539-4344) for specific recommendations.

Purpose of reporting and surveillance:

- To confirm mumps infection as the cause of parotitis.
- To educate potentially exposed persons about signs and symptoms of disease, thereby facilitating early diagnosis and preventing further transmission.
- To assist in the diagnosis of cases.
- To identify contacts and recommend appropriate preventive measures, including exclusion and immunization.
- To identify situations of undervaccination or vaccine failure.

Reporting requirements:

- Health care providers: notifiable to Local Health Jurisdiction within 3 work days
- Hospitals: notifiable to Local Health Jurisdiction within 3 work days
- Laboratories: no requirements for reporting
- Local health jurisdictions: notifiable to DOH Communicable Disease Epidemiology within 7 days of case investigation completion or summary information required within 21 days

CASE DEFINITION FOR SURVEILLANCE

Clinical criteria for diagnosis:

An illness with acute onset of unilateral or bilateral tender, self-limited swelling of the parotid or other salivary gland, lasting ≥ 2 days, and without other apparent cause.

Laboratory criteria for diagnosis:

- Isolation of mumps virus from clinical specimen, or
- Significant rise between acute- and convalescent-phase titers in serum mumps immunoglobulin G (IgG) antibody level by any standard serologic assay, or

- Positive serologic test for mumps immunoglobulin M (IgM) antibody.

Case definition:

- Probable: a case that meets the clinical case definition, has noncontributory or no serologic or virologic testing, and is not epidemiologically linked to a confirmed or probable case.
- Confirmed: a case that is laboratory confirmed or that meets the clinical case definition and is epidemiologically linked to a confirmed or probable case. A laboratory confirmed case does not need to meet the clinical case definition.

  Two probable cases that are epidemiologically linked would be considered confirmed, even in the absence of laboratory confirmation. False-positive IgM results by immunofluorescent antibody assays have been reported.

A. DESCRIPTION

1. Identification

An acute viral disease characterized by fever, swelling and tenderness of one or more salivary glands, usually the parotid and sometimes the sublingual or submaxillary glands. Orchitis, most commonly unilateral, occurs in 20%-30% of postpubertal males, and mastitis occurs in up to 31% of females older than 15 years; sterility is an extremely rare sequel. As many as 40%-50% of mumps infections have been associated with respiratory symptoms, particularly in children less than 5 years. Not all cases of parotitis are caused by mumps infection; however, other parotitis causing agents do not produce parotitis on an epidemic scale. Mumps can cause sensorineural hearing loss in children, at an incidence of 5 per 100,000 cases. Encephalitis is rare (1-2/10,000 cases); pancreatitis, usually mild, occurs in 4% of cases but a suggested association with diabetes remains unproven.

Permanent sequelae such as paralysis, seizures and hydrocephalus are rare, as are deaths due to mumps. Mumps infection during the first trimester of pregnancy may increase the rate of spontaneous abortion, but there is no firm evidence that mumps during pregnancy causes congenital malformations.

Acute mumps infection can be confirmed by a significant rise in IgG antibody titer in acute and convalescent sera, by the presence of mumps specific IgM or by positive mumps viral cultures. Serologic tests used to confirm acute or recent mumps infection include enzyme-linked immunosorbant assay, hemmagglutination inhibition and complement fixation. Mumps immunity can be documented by the presence of IgG mumps specific antibodies by EIA, IFA or neutralization. Virus may be isolated from the buccal mucosa from 7 days before until 9 days after salivary enlargement and from urine from 6 days before to 15 days after the onset of parotitis.

2. Infectious Agent

Mumps virus, a member of the family Paramyxoviridae, genus Paramyxovirus, is antigenically related to the parainfluenza viruses.

3. Worldwide Occurrence

Mumps is recognized less regularly than other common communicable diseases of childhood, such as measles and chickenpox, although serologic studies show that 85% or more of people have had mumps infection by adult life in the absence of immunization. About 1/3 of exposed susceptible people have inapparent infections; most infections in children less than 2 years of age are subclinical. Winter and spring are seasons of greatest incidence.

In the US, the incidence of mumps has declined dramatically since the wide use of mumps vaccine began after its licensure in 1967. This decline has occurred in all age groups, but with effective pediatric and preschool immunization programs, the greatest risk of infection has shifted toward older children, adolescents and young adults. While mumps outbreaks in the 1980s were attributed to failure to immunize susceptible individuals, more recent outbreaks have occurred among highly immunized populations. During the 1990s, the annual incidence of mumps declined steadily. In 1997, fewer than 700 cases of mumps were reported in the US.

4. Reservoir

Humans.

5. Mode of Transmission

Airborne transmission or by droplet spread and by direct contact with the saliva of an infected person.

6. Incubation period

About 15-18 days (range, 14-25).

7. Period of communicability

Virus has been isolated from saliva from 6-7 days before overt parotitis to 9 days after onset of illness. Maximum infectiousness occurs between 2 days before to 4 days after onset of illness. Inapparent infections can be communicable.

8. Susceptibility and resistance

Immunity is generally lifelong and develops after either inapparent or clinical infections. Most adults, particularly those born before 1957, are likely to have been infected naturally

and may be considered to be immune, even if they did not have recognized disease. The demonstration of mumps IgG antibody by serologic assays is acceptable evidence of mumps immunity.

B. METHODS OF CONTROL

1. Preventive measures:

a. Public education by health care providers should encourage mumps immunization for all susceptible individuals over 1 year of age who were born in 1957 or later.
b. A live attenuated mumps virus vaccine (Jeryl Lynn strain) was introduced in the US in 1967 and is available either as a single vaccine or in combination with rubella and measles live virus vaccines (MMR). The reported incidence of adverse reactions depends on the strain of mumps virus used. In controlled trials, the incidence of fever in vaccines was similar to that in placebo recipients. Parotitis, usually unilateral, has been reported in 1% of recipients about 2 weeks after immunization with the vaccine used in the US. Other reactions, including aseptic meningitis, encephalitis and thrombocytopenia, have been reported rarely.

   Immunization of people already immune, either by wild or vaccine virus infection, is not associated with increased risk of adverse reactions. More than 95% of recipients develop immunity that is long-lasting and may be lifelong. Vaccine may be administered any time after 1 year of age, preferably as MMR at 12-15 months of age.

   Present recommendations in the US for 2-dose immunization with MMR will protect against mumps. The first dose of MMR is recommended at 12 months of age with a second dose recommended at 4-6 years. However, in an accelerated MMR schedule, or a catch-up opportunity, the second dose may be given as soon as 1 month (28 days) after the first dose. Special effort should be made to immunize before puberty all persons with no definite history of mumps or mumps immunization.

   Vaccine is contraindicated in the immunosuppressed; however, treatment with a low dose of steroid (less than 2 mg/kg/day), steroids given on alternate days, topical steroid use or aerosolized steroid preparations are not contraindications to mumps vaccine. Pregnant females or females trying to get pregnant in the next 3 months should not receive mumps vaccine for theoretical reasons, although no evidence exists that mumps vaccine causes fetal damage. See MEASLES or RUBELLA for vaccine storage and transport and for greater detail on contraindications.

2. Control of patient, contacts and the immediate environment:

a. Report to local health authority.
b. Isolation: Respiratory isolation and private room for 9 days from onset of swelling; less if swelling has subsided. Exclusion from school or workplace until 9 days after onset of parotitis if susceptible contacts (those not immunized) are present.
c. Concurrent disinfection: Of articles soiled with nose and throat secretions.

d. Quarantine: Exclusion of susceptibles from school or the workplace from the 12th through the 25th day after exposure if other susceptibles are present.
e. Immunization of contacts: Although immunization after exposure to natural mumps may not prevent disease in contacts, those who do not develop disease would be protected against infection from subsequent exposures. IG is not effective and not recommended.
f. Investigation of contacts and source of infection: Susceptible contacts should be immunized.
g. Specific treatment: None.

3. Epidemic measures

Immunize susceptibles, especially those at risk of exposure; serologic screening to identify susceptibles is impractical and unnecessary, since there is no risk in immunizing those who are already immune.

4. International measures

None.